

On the species composition of Pseudoscorpiones (Arachnida) from Amazonian dryland and inundation forests in Brazil

by

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With 2 figures

ABSTRACT

Ten families, 26 genera and 60 species are presently reported from Amazonia. 29 species are restricted to dryland forests and 25 species to inundation forests. Pseudoscorpion species from inundation forests are predominantly arboricol, species from dryland forests are more terricole.

1. INTRODUCTION

Terrestrial arthropods of Central Amazonian forest ecosystems have been studied more intensively during the last 15 years (e.g. ADIS 1981, ADIS & SCHUBART 1984, IRMLER 1976). As of now, 35.000 collected pseudoscorpions have been identified to species (MAHNERT 1979, 1984, 1985*a, b*, MAHNERT *et al.* 1986). First data on their biotope and habitat (MAHNERT & ADIS 1985), and on phenology and life-cycle have been

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presented (ADIS & MAHNERT 1985, ADIS *et al.* 1987, MAHNERT & ADIS 1985, MORAIS 1985, RODRIGUES 1986). In this paper, the fauna of Amazonian pseudoscorpions from inundation forests and dryland forests (= non-flooded tropical moist forests) will be compared.

2. RESULTS AND DISCUSSION

Ten families, 26 genera and 60 species are presently reported from Amazonia (Table 1). There is no difference in numbers recorded for dryland and inundation forests on all taxonomic levels (χ^2 -test). For example, nine families representing 33 species are known from dryland forests and eight families representing 29 species from inundation forests. However, differences are found for species and genera occurring exclusively in dryland or inundation forests (Fig. 1, Table 1). Out of 62 species collected in dryland and inundation forests (Table 1), 29 species (=47%) were restricted to dryland forests and 25 species (=40%) to inundation forests (Fig. 1). This is also true, but less pronounced, at the genus level. Data support the hypothesis of ERWIN & ADIS (1982) that Amazonian inundation forests represent faunal evolutionary centers. Some species which are morphologically identical and found in both forest types show ethological and biological

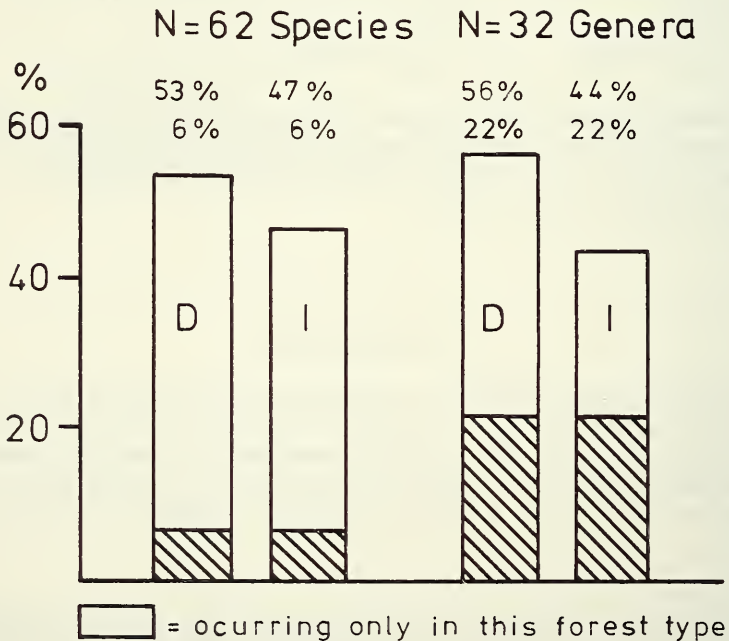


FIG. 1.

Percentage of species and genera of Pseudoscorpiones collected from one or two forest types in Amazonia, Brazil (N = 100%). D = dryland forests, i = inundation forests.

differences (e.g. *Brazilatennus browni*, Miratennidae; ADIS *et al.* 1987) or can be separated enzymatically (cf. *Neomachilellus scandens*, Meinertellidae (Archaeognatha); ADIS & STURM 1987). These would have to be considered different species as well. Taking this into consideration, "endemism" of the pseudoscorpion fauna in inundation forests is becoming still more pronounced when compared to dryland forests.

TABLE 1.

Families, genera and species of Pseudoscorpiones reported from Amazonia of Brazil (from MAHNERT & ADIS 1985).

	Σ	D	i	D + i	Others
Families	10	9 (1) ^a	8 (2) ^b	7	—
Genera	26	18 (11)	14 (7)	7	1*
Species	60	33 (29)	29 (25)	4	1* + 1 ⁺

D=dryland forests; i=inundation forests, () occurring only in this forest type; *=phoretic; +=no data on habitat; a=Syarinidae; b=Atemnidae and Withiidae.

Generally the number of pseudoscorpion species is higher in blackwater inundation forests as compared to whitewater inundation forests, and in primary dryland forests as compared to secondary dryland forests (Table 2). Pseudoscorpion species from inundation forests are predominantly arboricole, with 88% living in the trunk/canopy region. Species from dryland forests are more terricole, with 69% living in litter and soil (Table 2, Fig. 2). Difference in habitat selection is attributed to the flood pulse (JUNK *et al.* 1989), i.e. annual long-term inundation of up to 6 months (cf. ADIS 1981). The monomodal flood pattern of the Amazon river and its tributaries causes a pronounced seasonality of terrestrial invertebrates (e.g. ADIS & STURM 1987). In pseudoscorpions, vertical migrations between soil and trunk of all or of particular developmental stages and distinct periods of reproduction have been observed for species from inundation forests but not in species from dryland forests. In dryland forests, pseudoscorpions are habitat specific and polyvoltine, i.e. first developmental stages and adults can be collected throughout the year in the same stratum (ADIS *et al.* 1987, MORAIS 1985, RODRIGUES 1986). Seasonal fluctuation of species number and abundance in the respective habitat of inundation forests implies ecological knowledge of each pseudoscorpion species, to provide data on diversity. Evaluation of long-term catches (12-18 months) which were made in different habitats and forest biotopes during the last years will enable comparison of data on a more sophisticated level (diversity indices) in the near future.

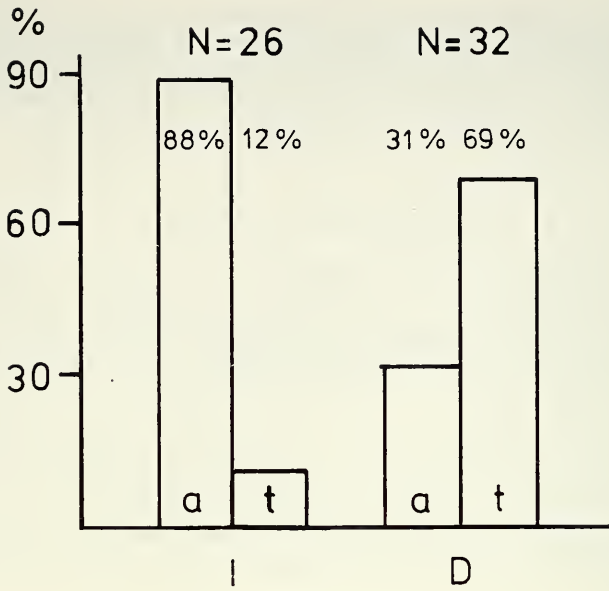


FIG. 2.

Percentage of arboreal (a) and terricolous (t) species of Pseudoscorpiones in dryland forests (D) and inundation forests (I) in Amazonia, Brazil (N=100%).

TABLE 2.

Number of species of Amazonian Pseudoscorpiones according to sampling locality and forest type (as far as known; cf. MAHNERT & ADIS 1985).

forest type	Σ	trunk/canopy	soil/litter
I	29	29 [23]	8 [2-3]
- S	20	20 [16]	5 [-]
- W	11	11 [8]	3 [-]
- M*	3	3 [2]	1 [-]
D	33	10	22
- P	13	4	8
- S	9	1	8

I=inundation forests: - S=in the blackwater region (e.g. Rio Negro); - W=in the whitewater region (e.g. Rio Solimões); - M=in the mixedwater region (e.g. located between Rio Negro and Rio Solimões).

D=dryland forests: - D=primary forest; - S=secondary forest []=main reproduction at sampling locality (≠ primary habitat); *= preliminary data.

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